

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

Rec'd PCT/PTO 12 MAY 2005

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NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing
(day/month/year)

01.12.2004

Applicant's or agent's file reference
SCB 815 PCT

IMPORTANT NOTIFICATION

International application No.
PCT/EP 03/12375

International filing date (day/month/year)
06.11.2003

Priority date (day/month/year)
14.11.2002

Applicant
DIPHARMA S.p.A.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international preliminary examining authority:



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PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference SCB 815 PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 03/12375	International filing date (<i>day/month/year</i>) 06.11.2003	Priority date (<i>day/month/year</i>) 14.11.2002
International Patent Classification (IPC) or both national classification and IPC C07C201/02		
Applicant DIPHARMA S.p.A.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

I ☒ Basis of the opinion

II ☐ Priority

III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

IV ☐ Lack of unity of invention

V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

VI ☐ Certain documents cited

VII ☐ Certain defects in the international application

VIII ☐ Certain observations on the international application

Date of submission of the demand 25.05.2004	Date of completion of this report 01.12.2004
Name and mailing address of the international preliminary examining authority: <div style="display: flex; align-items: center;"> <div> European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465 </div> </div>	Authorized Officer Seelmann, M Telephone No. +49 89 2399-8335



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP 03/12375

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-9 as originally filed

Claims, Numbers

1-10 filed with telefax on 04.10.2004

Drawings, Sheets

1/1 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP 03/12375

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-10
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-10
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

2. Citations and explanations

see separate sheet

D1 WO0110814

D2 WO9825918

D3 K.Treves *et al.*, Environ.Sci.Technol., 34, 1197-1203 (2000)

D4 Kirk-Othmer, Encl. Chem. Technol., 10, 139-139 (1993)

Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

V.1 Novelty - Art.33(2) PCT

D4 relates to the general knowledge about liquid-liquid extraction in connection with countercurrent performance.

D3 describes the preparation of 1,4-butanediol mononitrate by nitrating 1,4-butanediol with zinc nitrate in presence of DCC and isolation by flash chromatographic work (method 1, page 1198; page 1200, 1st paragraph).

Aliphatic nitroxyalcohols are used in **D1** as starting materials to prepare the corresponding nitroxyalkylesters. In particular, 4-nitroxybutan-1-ol (BDMN) is used in examples 1, 2 and 6 as starting material. These nitroxyalcohols are said in **D1** to be prepared according to the method provided in **D2**. In **D2** the method is outlined based on the preparation of cycloaliphatic nitroxyalcohols by reacting the corresponding diol with nitric acid in chloroform or trichloromethane and performing at the end of the reaction two consecutive extractions, first with water to quench the reaction and then with an organic chlorinated solvent as a second step (preparation 1; preparation 3, stade B; preparation 4, stade B). The final product is purified by chromatographic work. Accordingly the process outlined in **D1/D2** corresponds to example 4 of the present application or the final product obtained after the work-up of the reaction in **D1/D2** is the starting solution/material to be purified in the present application

Accordingly the present purification process is novel.

V.2 Inventive step - Art. 33(3) PCT

The closest purification process of BDMN is known from **D2** and differs in that the nitrate is

recovered upon chromatographic and not extractive work-up (preparation 1). The technical problem posed is to provide a separation process for BDMN avoiding cristallization and distillation (page 2, lines 8-9). The solution is two successive extractions, first with water followed with a water-immiscible organic solvent. Extraction in two steps has already been performed in **D2** with water and an organic chlorinated solvent to work-up the reaction mixture. Additional extractions in order to purify a product are routine for a skilled person. No inventive step could be recognized for the present process.

Additionally the attention of the applicant is drawn to the fact that performing en extraction in counter-current is commercially the most advantageous one (**D4**, page 137), so that the proposed solution in the dependent claims is obvious in view of **D1/D2** and **D4**.

V.3 Further comments

Certain defects in the international application; Certain observations on the international application

The purification process of the present demand corresponds to an extraction in two steps, first with water: step a), then with a water-immiscible solvent: step b). From the wording of claim 1, the aqueous phase of step a) is to be extracted with the water-immiscible organic solvent of step b). Therefore the reasons for having a dependent claim 5 are confusing. The problem does not reside that there is no support in the description for claim 5. The examiner agrees with the applicant on that point that there is a support for this claim on page 2, lines 24-25. **The present problem is that claims 1 and 5 are identical.** Accordingly claim 5 contravenes to the requirements of conciseness of article 6 PCT, since it repeats what is already provided in claim 1. If the applicant means that additional washings of the aqueous phase are performed in order to extract most of the final product and gathered all the organic phases, then he should have reformulate accordingly ! At the moment this is not what can be understood from the wording of this claim !